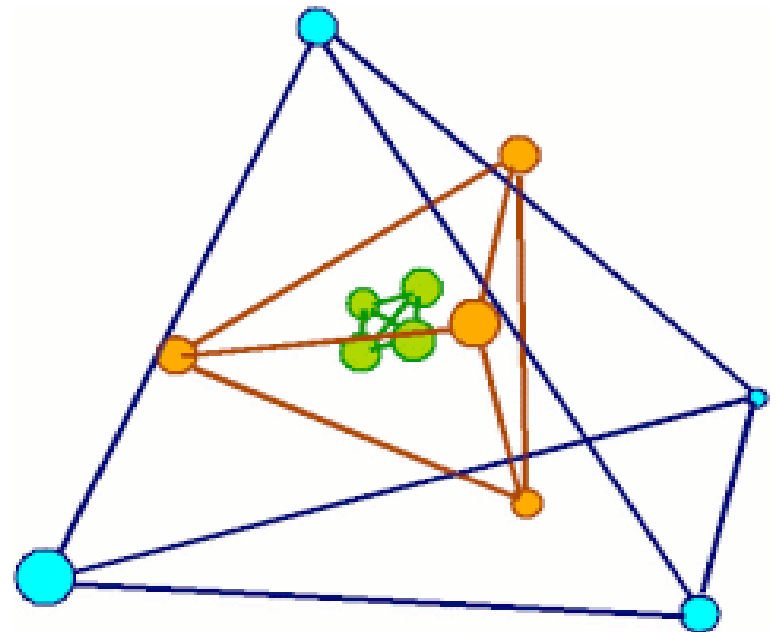


# Cross-Scale current status

Andris Vaivads  
(Swedish Institute of Space Physics)

ILWS Steering Committee & Working Group Meeting  
June 11-13, 2007, Uppsala, Sweden



# Fundamental space plasma processes

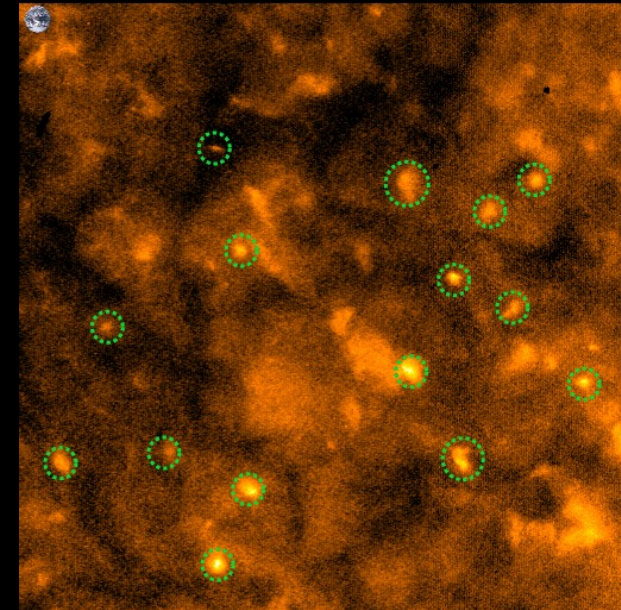
Bow shock near young star



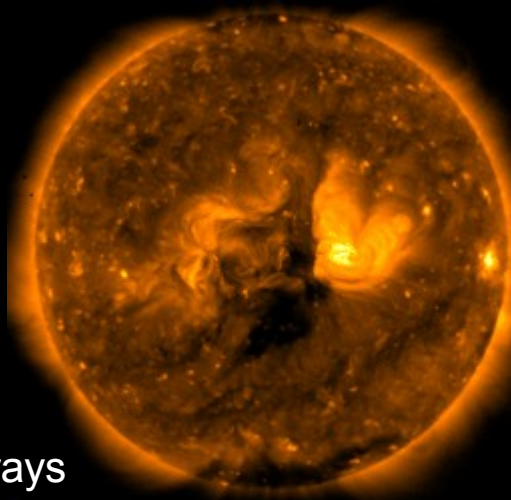
Shocks

Reconnection

Turbulence



Quiet regions – Xray spots



Sun in Xrays



Sun in visible

# Fundamental space plasma processes

Collisionless plasma

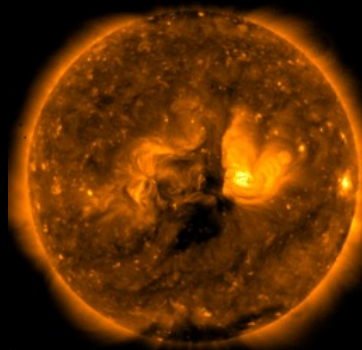
Time-varying and fundamentally 3D

Involve interaction between various scales  
electron, ion, MHD

near Earth space – the best in situ laboratory



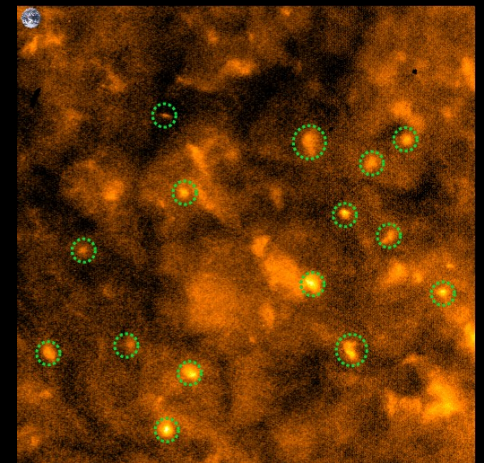
Bow shock near young star



Sun in Xrays

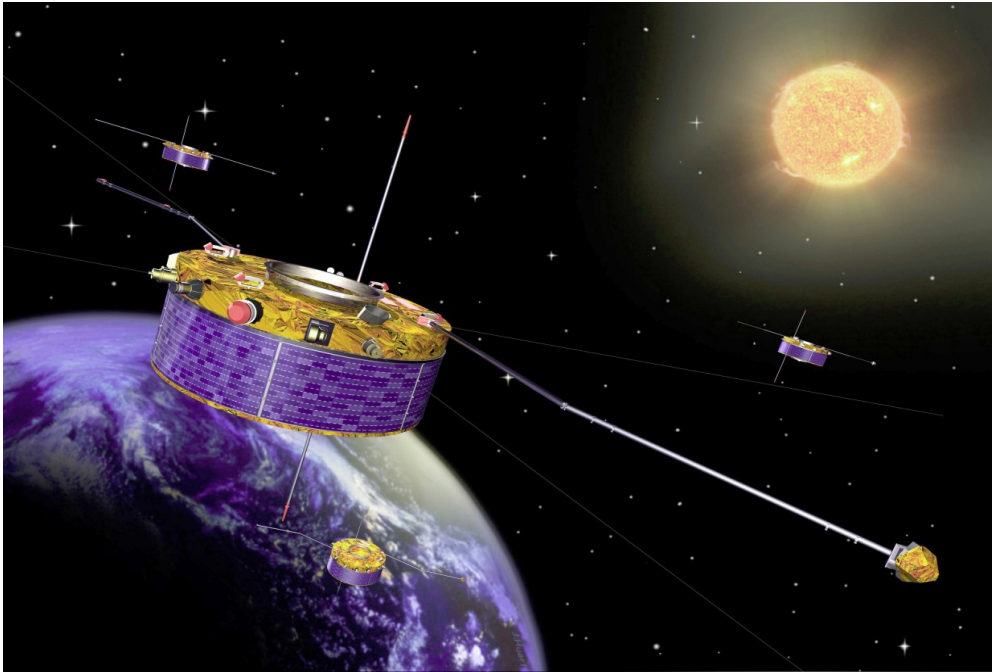


Sun in visible



Quiet regions – Xray spots

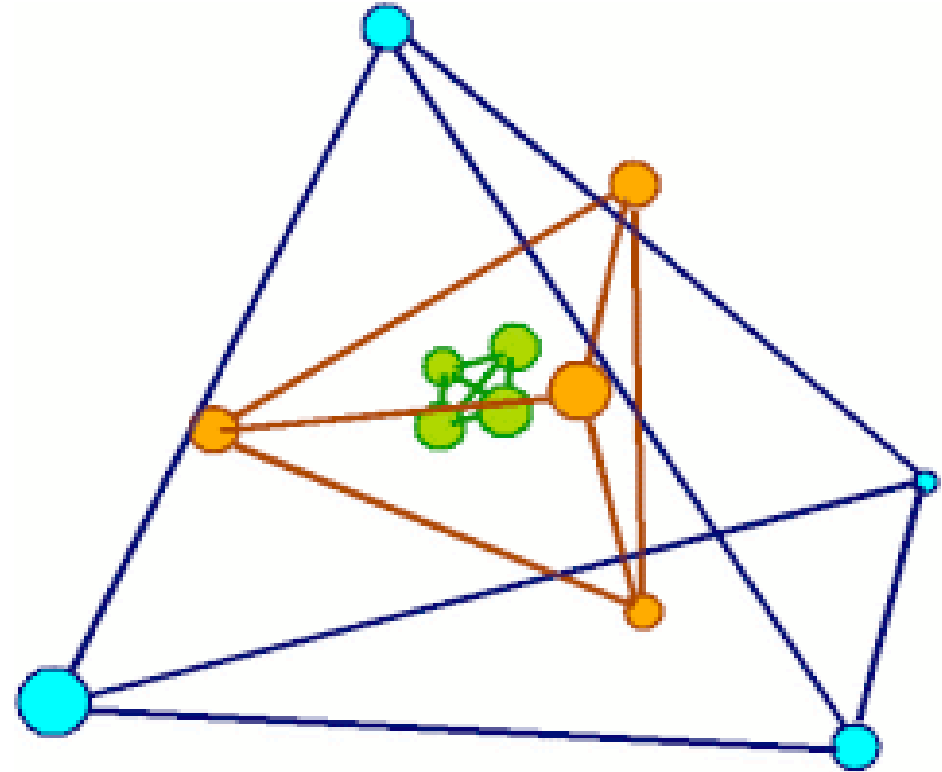
## Cluster, MMS



### **1 scale at a time**

during the mission has covered scales from slightly below ion scale to fluid scale

## Cross-Scale

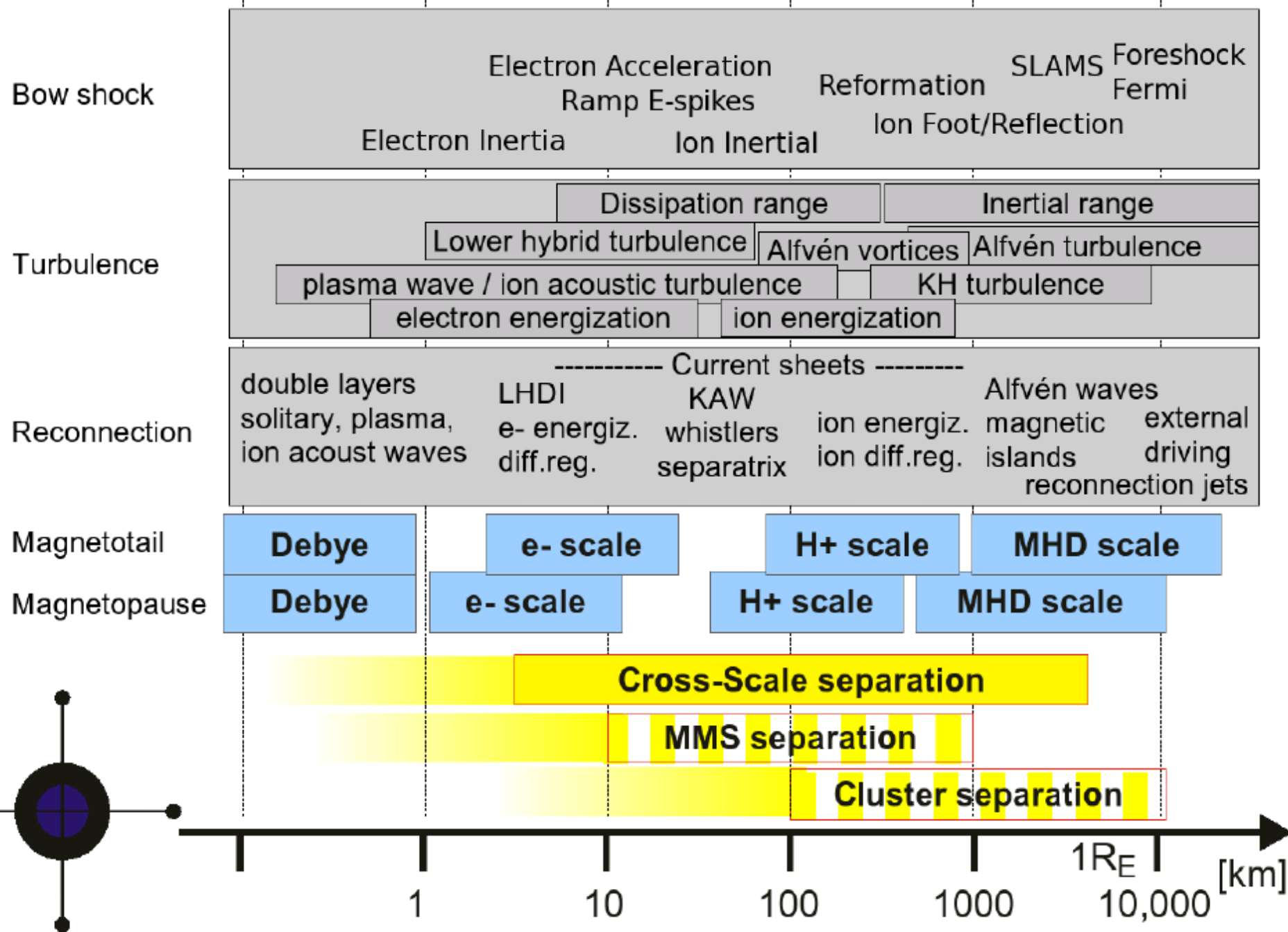


### **3 scales simultaneously**

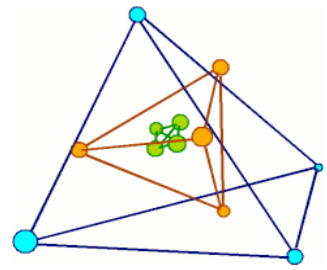
- fluid (MHD)
- ion
- electrons



# Multiscales in Earth magnetosphere



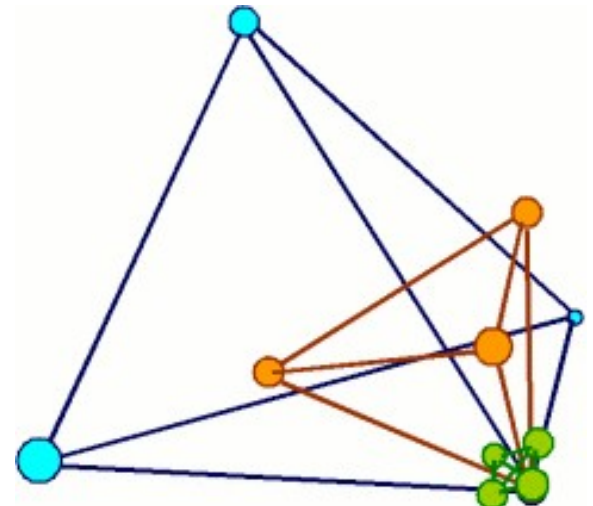
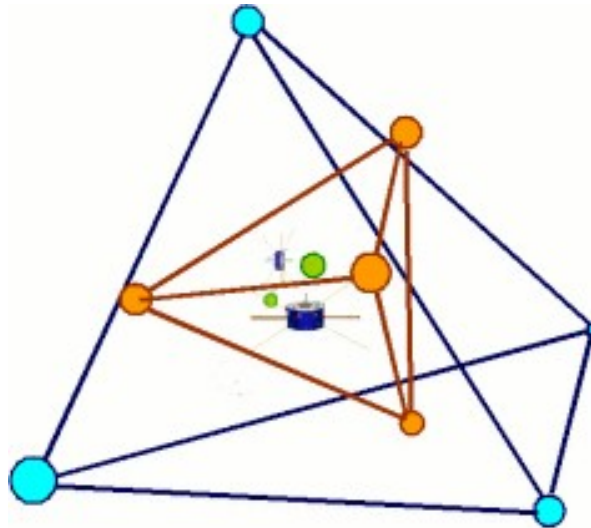
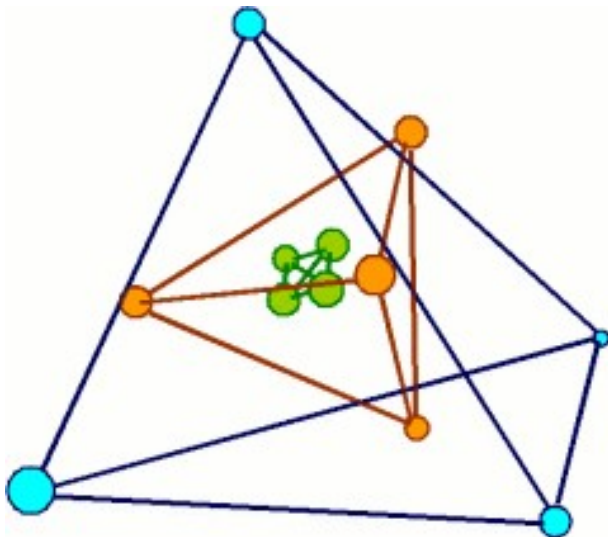
# Cross-Scale status



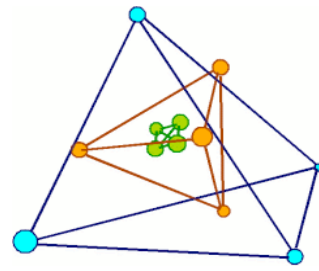
- ✓ Proposal to ESA Cosmis Vision 2015-2025
- ✓ M-class mission
- ✓ The core mission can/should be combined with JAXA Scope
- ✓ Added value (e.g. coverage of additional scales) from involment of other interested parts
- ✓ Proposal coordinated by Steve Schwartz
- ✓ First draft to signatories (>300) this week
- ✓ <http://www.cross-scale.org/>

# Cross-Scale configuration

- ✓ Number of s/c: 12 – optimal, 7 – minimum
- ✓ Example possibilities:
  - 10 ESA
  - 10 ESA + 2 JAXA
  - 6 ESA + 2 JAXA



# Cross-Scale Technology Reference Study



- ✓ Started april 2006

